UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,498	12/19/2001	Pierre Aimar	03715.0101	8486

7590 09/11/2003

Anthony C. Tridico
Finnegan, Henderson, Farabow,
Garrett & Dunner, L.L.P.
1300 I Street, N.W.
Washington, DC 20005

EXAMINER	
MENON, KRISHNAN S	
ART UNIT	PAPER NUMBER
1723	

DATE MAILED: 09/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/021,498	AIMAR ET AL.	
	Examiner	Art Unit	
	Krishnan S Menon	1723	

-- Th MAILING DATE of this communication app ars on the cover sheet with th correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *6/18/03* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claims 1-8 are pending

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by H. Ohya et al (XP-001023196: "Proposal of an integrated system for the complete usage of sea water", NIPPON KAISUI GAKKAISHI, vol 49, no. 4, 1995 pages 195-201)

Ohya (XP-196) teaches a process for depleting monovalent cations from water by subjecting to RO, and then subjecting the RO retentate to electrodialysis, and recovering water depleted in monovalent cations (see fig 1.) as in instant claim 1. The recovery of the divalent cations is more than 65% (by material balance from the concentrations and flow rates to the ED unit given in Fig 1) and yield of water depleted in monovalent cations is about 100% overall (see fig 1) as in instant claim 3. Re the newly added limitations in claim 1: "standard pressure": fig 2 of the reference shows an operating pressure of 5 MPa, which is within the range of what applicant considers as std pressure (page 2 last para of specification). "recovering from the electrodialysis": Fig 1 of the ref shows recovering water depleted in both mono and multi valent ions from the ED unit.

2. Claims 1 and 6-8 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Abe et al (US 6,187,201 B1).

Abe (201) teaches a process for depleting monovalent cations from water comprising subjecting the water to reverse osmosis (5-fig 1), retentate of the RO subjected to electrodialysis (7-fig 1) and recovering depleted water in monovalent cations (col 2 lines 18-40) as in instant claim 1. The sodium content in the water depleted in monovalent cations is less than 20 mg/L (table I) as in instant claim 6, and the pressure for the RO is less than 10 MPa or 5 MPa (col 3 lines 44-47) as in instant claim 7 and 8.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohya (XP-196) in view of Conger (US 4,141,825)

Ohya teaches all the limitations of claims 2 as in claim 1 above, except directly adding the water depleted in monovalent cations to the permeate from the RO. Conger (825) teaches mixing RO permeate water and electrodialysis product water (col 4 lines 3-14). It would be obvious to one of ordinary skill in the art at the time of invention to add the water depleted in monovalent cations from the electrodialiser to the permeate of the RO in the teaching of Ohya (XP-196) similar to the teaching of Conger (825) for making potable water low in sodium.

4. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe (201) in view of Conger (825).

Abe teaches all the limitations of the instant claims as in claim 1 above, except the salt concentrations of the feed (tap) water. Conger (825) teaches the concentrations of feed (slightly brackish) waters below 3g/L ppm (col 3 lines 1-10). It would also be obvious to one of ordinary skill in the art at the time of invention that the "tap water" specified by Abe (col 4 lines 35-38) would also have total ions about 3g/L or less, similar to what is taught by Conger, and the sodium content would be about 150 mg/L or less, because tap water (drinkable) would have salt concentrations less than that of brackish water as taught by Conger.

Response to Arguments

Applicant's arguments filed 6/18/03 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., electriodialysis increases in selectivity as the ionic force increases; electrodialysis is used to separate divalent ions) are not recited in the rejected claim(s). Although the claims are interpreted in light of the

specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Re argument that Ohya is not enabling because it is a paper ref, and does not disclose that the [high pressure reverse osmosis] technology existed at the time: This is only a surmise on the part of the applicant. The paper was published in 1995. Reverse osmosis membranes for desalinating seawater is in existence way before this date. See Hendy (US 4,866,099) as an example. Moreover, the paper does not state that such technology did not exist. Argument that it is 'merely a paper reference' also does not make it non-enabling.

Re Argument that Ohya does not teach that reverse osmosis can be carried out in the absence of high pressure: see fig 2 of Ohya, which shows operating pressure of 5 MPa. Applicant's definition of "standard pressure" includes about 5 MPa (see page 2 last para of specification). Therefore, Ohya anticipates claim 1 as amended. Re argument that Ohya does not teach separation of divalent cations, please see fig 1 of Ohya, product and recycle streams from ED unit – multivalent ions.

Re argument that Abe does not teach the process of claim 1: Claim 1 is open-ended, claiming water to be subjected to reverse osmosis, subjecting retentate to electro-dialysis and recovering water depleted in monovalent ions from electro-dialysis, all of which is done in Abe. The claim is not specific on the sequence of operation. Line 7 of fig 1 of Abe is a retentate recycle line (see col 4 lines 50-56).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S Menon whose telephone number is 703-305-5999. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 703-308-0457. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Krishnan Menon
Patent Examiner

W. L. WALKER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700